

IN THE CLAIMS

1. (Currently Amended) An interference cancellation apparatus, applied in ~~the~~ a CDMA communication system in which transmission rate information for each user in a plurality of users is known, and ~~which~~ configured to sequentially ~~caneels~~ cancel the interference among each of said users based on a rank of each ~~of said~~ user, said apparatus comprising:

a rank determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user, from a highest ranked user to a lowest ranked user, based on the known transmission rate information ~~for that particular~~ of each user, wherein the known transmission rate of each user is not detected by measuring signal power.

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2. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 1, further comprising:

a level ranking determination unit ~~which determines~~ configured to determine the rank of each of said user based on ~~the~~ a level of ~~the~~ an incoming signal when the incoming signal is a signal on which transmission power control is not executed.

3. (Currently Amended) An interference cancellation apparatus, applied in the CDMA communication system according to claim 1, further comprising:

a plurality of interference cancellation units, connected by at least a number of stages corresponding to ~~the~~ a number of said users, wherein each of which performs interference cancellation unit is configured to perform interference cancellation based on a rank provided in each stage, and each ~~of which detects~~ interference cancellation unit is configured to detect the transmission rate information; and

a rank updating unit ~~which updates~~ configured to update the rank to be used in interference cancellation units of ~~the~~ a following stage based on the transmission rate information detected in each of said interference cancellation units.

4. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 3, wherein ~~the~~ a first interference cancellation unit ~~out~~ of said plurality of interference cancellation units stores ~~the~~ a rank of said users obtained in ~~the~~ a previous calculation and uses ~~this~~ the rank for ~~the~~ a current calculation.

5. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 3, further comprising:

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a level ranking determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user based on ~~the~~ a level of ~~the~~ an incoming signal when the incoming signal is a signal on which transmission power control is not executed.

6. (Currently Amended) An interference cancellation apparatus, applied in ~~the~~ a CDMA communication system in which transmission rate information and required quality information for each user in a plurality of users is known, and ~~which~~ configured to sequentially ~~cancels~~ cancel the interference among each of said users based on a rank of each ~~of said~~ user, said apparatus comprising:

a rank determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user, from a highest ranked user to a lowest ranked user, based on the known transmission rate information and the required quality information for ~~that particular~~ each user.

7. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 6, wherein said rank determination unit is configured to estimate an ~~estimates the~~ incoming signal power for each ~~of said users~~ user based on ~~the a~~ product of the transmission rate information and the required quality information for each respective user, and ~~determines~~ is configured to determine the rank of each ~~of said~~ user based on the estimated incoming signal power.

8. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 6, further comprising:

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a level ranking determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user based on ~~the a~~ level of ~~the an~~ incoming signal when the incoming signal is a signal on which transmission power control is not executed.

9. (Currently Amended) An interference cancellation apparatus, applied in the CDMA communication system according to claim 6, further comprising:

a plurality of interference cancellation units, connected by at least a number of stages corresponding to ~~the a~~ number of said users, wherein each of which performs interference cancellation unit is configured to perform interference cancellation based on a rank provided in each stage, and each ~~of which detects~~ interference cancellation unit is configured to detect the transmission rate information; and

a rank updating unit ~~which updates~~ configured to update the rank to be used in interference cancellation units of ~~the a~~ following stage based on the transmission rate information detected in each of said interference cancellation units and the known required quality information.

10. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 9, wherein said rank determination unit ~~estimates the~~ is configured to estimate an incoming signal power for each ~~of said users~~ user based on ~~the~~ a product of the transmission rate information and the required quality information for each respective user, and ~~updates~~ is configured to update the rank of each ~~of~~ said user based on the estimated incoming signal power.

11. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 9, wherein ~~the~~ a first interference cancellation unit ~~out~~ of said plurality of interference cancellation units stores ~~the~~ a rank of said users obtained in ~~the~~ a previous calculation and uses ~~this~~ the rank for ~~the~~ a current calculation.

12. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 9, further comprising:

a level ranking determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user based on ~~the~~ a level of ~~the~~ an incoming signal when the incoming signal is a signal on which transmission power control is not executed.

13. (Currently Amended) An interference cancellation apparatus, applied in ~~the~~ a CDMA communication system in which transmission rate information for some users in a plurality of users is known, but for other users in the plurality of users is unknown, and required quality information for ~~all said users~~ each user is known, and which is configured to

sequentially ~~cancels~~ cancel the interference among said users based on a rank of each ~~of said~~ user, said apparatus comprising:

a plurality of interference cancellation units, connected by at least a number of stages corresponding to ~~the~~ a number of said users, wherein each of which performs interference cancellation unit is configured to perform interference cancellation based on a rank provided in each stage, and each ~~of which detects~~ interference cancellation unit is configured to detect the transmission rate information;

a rank determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user whose transmission rate information is known based on the known transmission rate information and required quality information for ~~that particular~~ each user;

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a rank updating unit which, for the users whose transmission rate information is unknown, is configured to update a ~~updates the~~ rank to be used in interference cancellation units of ~~the~~ a following stage based on the transmission rate information detected in each of said interference cancellation units and the known required quality information; and

a selection unit ~~which selects~~ configured to select the rank determined by said ~~ranking~~ rank determination unit for said users whose transmission rate information is known, and ~~selects to select~~ the rank updated by said ~~ranking~~ rank updating unit for said users whose transmission rate information is unknown.

14. (Currently Amended) An interference cancellation apparatus, applied in ~~the~~ a CDMA communication system ~~according to claim 13 further comprising in which~~ transmission rate information for some users in a plurality of users is known, but for other users in the plurality of users is unknown, and required quality information for each user is known, and which is configured to sequentially cancel the interference among said users based on a rank of each user, said apparatus comprising:

a plurality of interference cancellation units, connected by at least a number of stages corresponding to ~~the~~ a number of said users, wherein each of which performs interference cancellation unit is configured to perform interference cancellation based on a rank provided in each stage, and each ~~of which detects~~ interference cancellation unit is configured to detect the transmission rate information;

a rank determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user whose transmission rate information is known based on the known transmission rate information ~~for that particular~~ of each user;

a rank updating unit which, for the users whose transmission rate information is unknown, ~~updates the~~ is configured to update a rank to be used in interference cancellation units of ~~the~~ a following stage based on the transmission rate information detected in each of said interference cancellation units; and

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a selection unit ~~which selects~~ configured to select the rank determined by said ~~ranking~~ rank determination unit for said users whose transmission rate information is known, and ~~selects to select~~ the rank updated by said ~~ranking~~ rank updating unit for said users whose transmission rate information is unknown.

15. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 13, wherein said rank determination unit ~~estimates the~~ is configured to estimate an incoming signal power for each ~~of said users~~ user based on ~~the~~ a product of the transmission rate information and the required quality information for each respective user, and ~~determines~~ is configured to determine the rank of each ~~of said~~ user based on the estimated incoming signal power.

16. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 13, wherein said rank determination unit ~~estimates the~~ is configured to estimate an incoming signal power for each ~~of said users~~ user based on ~~the~~ a product of the transmission rate information and the required quality information for each respective user, and ~~updates~~ is configured to update the rank of each ~~of~~ said user based on the estimated incoming signal power.

17. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 13, wherein ~~the~~ a first interference cancellation unit ~~out~~ of said plurality of interference cancellation units stores ~~the~~ a rank of said users obtained in ~~the~~ a previous calculation and uses ~~this~~ the rank for ~~the~~ a current calculation.

18. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 17, wherein said first interference cancellation unit ~~follows~~ uses the rank determined in said rank determination unit when said selection unit ~~has selected~~ selects the rank determined by said rank determination unit, and ~~follows~~ uses the stored rank when said selection unit ~~has selected~~ selects the rank determined by said rank updating unit.

19. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 17, wherein when ~~there is~~ a user whose rank is not stored in the previous calculation, ~~then~~ said first interference cancellation unit ~~determines~~ is configured to determine the rank of that ~~particular~~ user to be ~~the~~ a highest one rank.

20. (Currently Amended) The interference cancellation apparatus applied in the CDMA communication system according to claim 13, further comprising:

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a level ranking determination unit ~~which determines~~ configured to determine the rank of each ~~of said~~ user based on ~~the~~ a level of ~~the~~ an incoming signal when the incoming signal is a signal on which transmission power control is not executed.

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